

AMENDMENTS TO THE CLAIMS

Claim 1. (currently amended): An image processing method, comprising:

operating from object data on a pixel by pixel basis texture coordinates and LOD (Level of Detail) values expressed with the amount of change in u direction and v direction of texture coordinates;

selecting one mipmap corresponding to the integer part of either u direction or v direction of said LOD value from a plurality of mipmaps stored in a texture memory;

obtaining, for a pixel, a set of texture coordinates comprising a first texture coordinate in a first dimension and a second texture coordinate in a second dimension, and a set of level of detail (LOD) values comprising a first LOD value in said first dimension and a second LOD value in said second dimension;

determining[[,]] for said pixel, a filtering domain comprising a first number of texels along said first dimension and a second number of texels along said second dimension in a texture comprising of texels read from a texture memory[[;]] based on values below a decimal point of said LOD values in said selected mipmap; and

acquiring a weighted average depending on said texture coordinates and the size of said determined filtering domain to create a texture color to be pasted to pixels of said object data.

calculating a texture color as a weighted average of color values from texels in said filtering domain; and

pasting said texture color to said pixel;

~~wherein said first and second numbers are respectively related to said first and second LOD values.~~

Claims 2-3 (cancel):

Claim 4. (currently amended): The image processing method according to claim 1, wherein said step of determining comprises:

adding a predetermined offset to said ~~first~~ LOD values, ~~and said second LOD value.~~

Claim 5. (currently amended): The image processing method according to claim 1, wherein in said step of determining the filtering domain, either u direction or v direction of one of ~~said first and second~~ LOD values is first selected based on a parameter designating a method of selection of one mipmap from a plurality of mipmaps stored in said ~~the~~ texture memory, and then the one of the plurality of mipmaps is selected according to the selected u direction or v direction of said one of ~~the first and second~~ LOD values.

Claim 6. (currently amended): The image processing method according to claim 1, wherein at least one of u direction or v direction of said LOD values is said first and second numbers are also related to a state of a flag.

Claim 7. (currently amended): The image processing method according to claim 5, wherein either u direction or v direction of one of said ~~first and second~~ LOD values is selected and used for determining the filtering domain, corresponding to the parameter designating a method of selection of one mipmap from a plurality of mipmaps, according to a parameter, which designates whether or not either u direction or v direction of said one of the first and second LOD values is used.

Claim 8. (previously presented): An image processing method comprising:

on a pixel-by-pixel basis:

obtaining texture coordinates and a plurality of level of detail (LOD) values from an object data;

determining a filtering domain of texels read from a texture memory based on the LOD values; and

calculating a weighted average based on said texture coordinates and a size of said filtering domain to create a texture color to be pasted to said object;

wherein said step of calculating said weighted average comprises:

acquiring a blend ratio and a decision flag in said filtering domain from said texture coordinates and said filtering domain;

deciding, by said decision flag, texels to be excluded from the weighted average, out of said texels read from said texture memory; and

acquiring the weighted average of said texels in accordance with said blend ratio.

Claim 9. (previously presented): The image processing method according to claim 8, wherein said step of determining said filtering domain further includes:

modifying said LOD values with a predetermined parameter and determining a final filtering domain based on a flag indicative of how many texels are to be used to acquire a texture color; and

in case of selecting a mode of four texels by said flag indicative of how many texels are to be used to acquire a texture color, setting said decision flag corresponding to which one of four-divided domains of texels positioned centrally of nine texels contains the center point of said filtering domain.

Claim 10. (original): The image processing method according to claim 8, wherein said step of determining said filtering domain further includes:

modifying said LOD values with a predetermined parameter, and determining a final filtering domain based on a flag indicative of how many texels are to be used to acquire the texture color; and

in case of selecting a mode of nine texels by said flag indicative of how many texels are to be used to acquire the texture color, indicating said blend ratio and decision flag correspondingly to four areas into which said nine texels are divided by lines passing through the center of said filtering domain, a first one of said four areas containing the

upper left vertex of said filtering domain, a second one of said four areas containing the upper right vertex of said filtering domain, a third one of said four areas containing the lower left vertex of said filtering domain, and a fourth one of said four areas containing the lower right vertex of said filtering domain.

Claim 11. (currently amended): The image processing apparatus, comprising:

a circuit for ~~receiving, for a pixel, a set of texture coordinates comprising a first texture coordinate in a first dimension and a second texture coordinate in a second dimension, and a set of level of detail (LOD) values comprising a first LOD value in said first dimension and a second LOD value in said second dimension; operating upon texture coordinates and LOD (Level of Detail) values expressed with the amount of change in u direction and v direction of texture coordinates on a pixel by pixel basis from object data;~~

a circuit for ~~selecting one mipmap corresponding to the integrer part of either u direction or v direction of said LOD value from a plurality of mipmaps stored in a texture memory, and determining[[,]] for said pixel, a filtering domain comprising a first number of texels along said first dimension and a second number of texels along said second dimension, in a texture comprising of texels read from said [[a]] texture memory[[;]] based on values below a decimal point of said LOD value in said selected mipmap; and~~

a circuit for ~~acquiring calculating a texture color as a weighted average of color values from texels in said filtering domain; and depending on said texture coordinates and the size of said determined filtering domain to create a texture color to be pasted to pixels of said object data.~~

~~a circuit for pasting said texture color to said pixel;~~

~~wherein said first and second numbers are respectively related to said first and second LOD values.~~

Claims 12-13. (canceled):

Claim 14. (original): The image processing apparatus according to claim 11, wherein said circuit for determining adds a predetermined offset to said first and second LOD values.

Claim 15. (currently amended): The image processing apparatus according to claim 11, wherein said circuit for determining said filtering domain selects one of a plurality of mipmap data stored in a texture memory based on ~~one of said first and second either u direction or v direction of said~~ LOD values.

Claim 16. (currently amended): The image processing apparatus according to claim 11, wherein at least ~~one of said first and second numbers are either u direction or v direction of said~~ LOD values is also related to a state of a flag.

Claim 17. (cancel):

Claim 18. (currently amended): An image processing apparatus comprising:

a circuit for receiving, for a pixel, a set of texture coordinates comprising a first texture coordinate in a first dimension and a second texture coordinate in a second dimension, and a set of level of detail (LOD) values comprising a first LOD value in said first dimension and a second LOD value in said second dimension; operating upon texture coordinates and LOD (Level of Detail) values expressed with the amount of change in u direction and v direction of texture coordinates on a pixel by pixel basis from object data;

a circuit for selecting one mipmap corresponding to the integer part of either u direction or v direction of said LOD value from a plurality of mipmaps stored in a texture memory, and determining[[,]] for said pixel, a filtering domain comprising a first number of texels along said first dimension and a second number of texels along said second dimension, in a texture comprising of texels read from said [[a]] texture memory[[,]] based on values below a decimal point of said LOD value in said selected mipmap;

a circuit for acquiring calculating a color calculated as a weighted average depending on said texture coordinates and the size of said determined filtering domain to create a texture color to be pasted to pixels of said object data; of color values from texels in said filtering domain, said circuit comprising:

a first circuit for acquiring a blend ratio and a decision flag in said filtering domain from said texture coordinates and said filtering domain;

a second circuit for deciding, by said decision flag, texels to be excluded from said weighted average, out of said texels read from said texture memory; and

a third circuit for acquiring the weighted average of the texel in accordance with said blend ratio; and

a circuit for pasting said texture color to said pixel. [[;]]

~~wherein said first and second numbers are respectively related to said first and second LOD values.~~

Claim 19. (previously presented): The image processing apparatus according to claim 18, wherein said circuit for determining said filtering domain modifies said LOD values with a predetermined parameter and determines a final filtering domain based on a flag indicative of how many texels are to be used to acquire the texture color, and

wherein in case of selecting a mode of four texels by said flag indicative of how many texels are to be used to acquire the texture color, said first circuit acquires said decision flag corresponding to which one of four-divided areas of texels positioned centrally of nine texels contains the center of said filtering domain.

Claim 20. (original): The image processing apparatus according to claim 18, wherein said circuit for determining said filtering domain modifies said LOD values with a predetermined parameter and determines a final filtering domain based on a flag indicative of how many texels are to be used to acquire the texture color, and

wherein in case of selecting a mode of nine texels by said flag indicative of how many texels are to be used to acquire the texture color, said first circuit acquires said blend ratio and said decision flag correspondingly to four areas into which said nine texels are divided by lines passing through the center of said filtering domain, a first one of said four areas containing the upper left vertex of said filtering domain, a second one of said four areas containing the upper right vertex of said filtering domain, a third one of said four areas containing the lower left vertex of said filtering domain, and a fourth one of said four areas containing the lower right vertex of said filtering domain.

Claim 21. (currently amended): The image processing apparatus according to claim 15, 17, further comprising:

a circuit for creating an address for reading a texel from a texture RAM based on said texture coordinates and said modified LOD values; and

a circuit for sampling texels read from said texture RAM,

wherein said second circuit enters said texels sampled by said circuit for sampling texels, and rearranges corresponding texels based on said flag indicative of how many texels are to be used to acquire the texture color.